

## **BOATYARD GENERAL PERMIT**

This attachment contains the Ecology proposal for renewal of the Boatyard general permit. Some of the items here are still under discussion with Ecology staff and may change somewhat in the draft permit.

Ecology proposes to incorporate best management practices, mandatory best management practices, effluent limits and benchmark values in this permit.

The best management practices and some effluent limits were included in the previous permit. Benchmarks are new for this permit. "Benchmarks values are not water quality standards and are not permit limits. They are indicator values. Ecology considers values at or below benchmark as unlikely to cause a water quality violation." (PCHB 2004). Benchmarks are used in a general permit because of the difficulty in deriving site-specific water quality-based effluent limits.

**BEST MANAGEMENT PRACTICES (BMP's)** – The previous permit contained a requirement for use of BMP's. This permit proposes to continue that requirement. The BMP's for each facility will be placed in a document produced and maintained by the permittee. This document is called the Stormwater Pollution Prevention Plan (SWPPP). This is consistent with the Industrial Stormwater General Permit. The SWPPP will be updated by the permittee as required to meet limits or benchmarks.

**MANDATORY BMP's** – Ecology has determined that vacuum sanding is economically achievable and proposes this as a mandatory BMP. A six month compliance period will be allowed for those facilities not currently using this BMP. This compliance period is granted upon request of the permittee to Ecology.

**EFFLUENT LIMITS FOR PRESSURE WASH EFFLUENT** – The previous permit contained effluent limits for the pressure wash water discharged to non-delegated POTW's. Ecology proposes to continue those limitations in this permit.

**STORMWATER LIMITATIONS AND BENCHMARKS** – Ecology is proposing various effluent limitations and benchmarks depending upon the discharge situation. These are detailed and explained in the following pages.

- The proposed copper limits/benchmarks:

**Effluent Limit** for new source or new discharges to listed (copper, zinc) waters (marine and fresh) = (acute criteria)(1/percent dissolved) = **16 µg/l** for marine, (16 µg/l for freshwater) as total recoverable.

**Benchmark** for existing sources discharging to freshwater lakes (assume 25 mg/l hardness) = (acute criteria)(1/percent dissolved)(WER). With an acute criteria of 4.61 µg/l, a dissolved percentage of 30%, and a WER of 5 the benchmark is **77µg/l** or .08 mg/l. There is no dilution factor included in the calculation of the benchmark for these dischargers.

**Benchmark** for freshwater rivers or rivers with tidal fluctuation = (acute criteria)(1/percent dissolved)(df)(WER) = (4.61)(3.33)(10)(2.6) = **399 µg/l** (0.40 mg/l).

**Benchmark** for existing sources discharging to marine waters which are not impaired = (4.8 µg/L)(acute dilution factor)(1/percent dissolved)(assumed WER). With an acute dilution factor of 10, a dissolved percentage of 30%, and a WER of 2.6, the benchmark is **416 µg/l** (0.416 mg/l).

**Limit** for discharge to ground using enhanced filtration and discharging 200 feet or more from the waters edge = ground water criteria = 1000 µg/L (1.0 mg/l) before filtration

- The proposed benchmarks for TSS and Oil/Grease

TSS – 21 mg/L

Oil/Grease – 6 mg/L

These benchmarks were derived from the 2003 stormwater data. I took the average from the best 50% of the facility data and added 2 standard deviations.

- The proposed monitoring:

Stormwater – One sample/month in September, October, November, and December. If no sample is taken in any month, two samples in the following month. Discharge monitoring reports are required for each month a sample is required.

Pressure Wash Effluent to non-delegated POTW - effluent limits of 2.4 mg/L copper (as total recoverable), 3.3 mg/L zinc, and 1.2 mg/L lead. Monitoring and reporting required in June and September of each year.

- The proposed requirements for monitoring results above benchmark values:

**Response to Monitoring Results Above Permit Benchmark Values**

<b>Level One Response</b>
<b>Each</b> time the sampling results are above a benchmark value the permittee shall take the following actions:
<b>Actions: The permittee shall:</b> 1) conduct an inspection of their facility as promptly as possible after the sampling results are available. 2) the inspection shall: <ul style="list-style-type: none"><li>• evaluate possible sources of the benchmark parameter in the stormwater discharge,</li><li>• identify source /operational control methods by which the permittee can reduce stormwater contamination,</li><li>• evaluate whether any improvements or changes to the stormwater pollution prevention plan are warranted to control the benchmark parameter,</li></ul> 3) summarize the inspection results, including remedial actions taken, if any, and place them in the SWPPP, and 4) include a brief summary of inspection results and any proposed remedial actions with the discharge monitoring report for the sampling period.

### Level Two Response

A level two response shall be immediately initiated whenever four out of the previous eight sampling results are above the action levels identified above.

**Action: The Permittee shall:**

- 1) promptly identify the potential sources of stormwater contamination that are causing or contributing to the presence of the benchmark parameter,
- 2) investigate all available options of source control, operational control and stormwater treatment best management practices to reduce stormwater contaminate levels below permit benchmark values,
- 3) implement additional source and operational best management practices identified as part of this investigation,
- 4) prepare a level two source control report outlining actions taken, planned and any scheduled for implementing source and operational best management practices to reduce stormwater contaminate levels, and
- 5) submit the level two source control report to Ecology within six months of initiating a level two response.

### Level Three Response

If any ten samples are above the benchmark values, the permittee shall immediately initiate a level three response.

- Action: The Permittee shall:**
- 1) promptly identify the potential sources of stormwater contamination that are causing or contributing to the presence of the benchmark parameter,
  - 2) investigate all available options of source control, operational control and stormwater treatment best management practices to reduce stormwater contaminant levels to or below permit benchmark values,
  - 3) implement additional source control, operational control and stormwater treatment best management practices identified as part of this investigation within twelve months of initiating the level three response,
  - 4) prepare a level three source control report outlining actions taken, planned and scheduled to reduce stormwater contaminant levels including stormwater treatment best management practices, and
  - 5) submit the level three source control report to Ecology within twelve months of initiating a level three response.
  - 6) The permittee may request a waiver from employing stormwater treatment best management practices. The waiver request must be submitted to Ecology within 3 months of initiating the level three response and must include an explanation why the implementation of stormwater treatment best management practices are infeasible, **and** are not necessary for compliance with water quality standards due to unique site conditions. The stormwater treatment waiver request must be reviewed and approved by Ecology as a modification of permit coverage in accordance with condition **XXX** before the stormwater treatment waiver becomes effective.

## **SUPPLEMENTAL INFORMATION**

### **I. PERMIT HISTORY**

Under P-20 of the Puget Sound Water Quality Authority Plan, Ecology was directed to carry out a program for detection and identification of unpermitted discharge sources. One of the significant point source unpermitted discharge groups found by the Elliott Bay and Lake Union Urban Bay Action Teams was the boatyard industry.

Ecology signed a Memorandum of Agreement with the United States Environmental Protection Agency (EPA) for development and issuance of a general permit for small shipyards. During the development of this permit it was decided to describe facilities in this segment of the Ship and Boat Building and Repairing industry as boatyards. There are presently 130 boatyards under permit in Washington State. (note: 103 facilities listed in WPLCS as of 6/11/04)

### **Industry Process**

The applicable Standard Industrial Classifications, SIC, are:

SIC No. 3731 Ship Building and Repairing: "Establishments primarily engaged in building and repairing all types of ships, barges, and lighters, whether propelled by sail or motor power or towed by other craft. This industry also includes the conversion and alteration of ships."

SIC No. 3732 Boat Building and Repairing: "Establishments primarily engaged in building and repairing all types of boats."

A boatyard, defined for purposes of this permit, is a service business primarily engaged in new construction and repair of small vessels 65 feet or less in length. Services provided may include, but are not limited to: pressure washing, bottom and top side painting; engine, prop, shaft, and rudder repair and replacement; hull repair, joinery, bilge cleaning, fuel and lubrication system repair or replacement, welding and grinding on the hull, buffing and waxing, top-side cleaning, MSD (marine sanitation device) repair or replacement, and other activities necessary to maintain a vessel.

A boatyard may employ one or more of the following to remove or return a vessel to the water: marine railway, drydock, crane, hoist, ramp, or vertical lift. Some yards may build a limited number of custom boats usually constructed of fiberglass or aluminum. Permanent moorage facilities are not usually a feature of a boatyard though a few boatyards do have such facilities.

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Those boat repair activities, whether conducted by the vessel's owner or by an agent or contractor hired by the owner, which do not require coverage under this permit include the following:

Engine repair or maintenance conducted within the engine space without vessel haul-out, topsides cleaning, detailing and bright work, electronics servicing and maintenance, MSD servicing and maintenance that does not require haul-out, vessel rigging, minor repairs or modifications to the vessel's superstructure and hull above the waterline which are not extensive (i.e. 25% or less of the vessel's surface area above the waterline).

Historically boat repair has been done outdoors on the waterfront. The vessel was supported in a cradle, on barrels, or in a sling while work was done on the hull. Some facilities are endeavoring to change operations in order to do the boat repair under cover. This will contribute to quality control, reduce or eliminate discharges and improve worker safety.

If all activities are performed indoors, under cover, with no outside activities or exposure except haul-out, a permit may not be required.

During the first five year permit cycle (1992 -1997) divers conducting in-water hull cleaning submitted applications for coverage under the General Boatyard Permit. However, coverage was not granted pending further permit development. The Department issued guidelines in the interim. The second permit issuance prohibited the cleaning of a vessel's hull while afloat.

#### *WASTEWATER CHARACTERIZATION*

Wastes generated by boatyard activities include spent abrasive grits, spent solvent, spent oils, pressure wash wastewater, paint over-spray, paint drips, various cleaners and anti-corrosive compounds, paint chips, scrap metal, welding rods, wood, plastic, resins, glass fibers, and miscellaneous trash such as paper and glass. These pollutants may enter the wastewater stream through the application and preparation of paints and the painted surface; the handling, storage and accidental spills of chemicals, leaks or drips of paints, solvents, thinners; the fracturing and breakdown of abrasive grits, and the repair and maintenance of mechanical equipment.

Hull preparation for painting will commonly be by sanding, grinding or scraping and some abrasive blasting. Boatyards are relatively small generators of spent grits, paint chips and particulate debris compared to a shipyard.

The primary source of wastewater is storm water runoff. Secondary sources are pressure washing, cooling water, pump testing, gray water, sanitary waste, washing down the work area, and engine bilge water. Engine room bilge water and oily wastes are typically collected and disposed of through a licensed contracted disposal company.

A significant achievement of the first issuance was elimination of all direct discharges of pressure wash wastewater. None could meet the effluent limits for direct discharges to

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fresh or marine water surface water. All boatyards are discharging to the sanitary sewer, recycling or evaporating the pressure wash wastewater. The boatyards have achieved compliance with effluent limits for discharges to municipal sanitary sewers during the first permit cycle.

The second permit required storm water monitoring. A data base of this monitoring was produced (after an extensive effort to clean the data) and used for calculations in this permit.

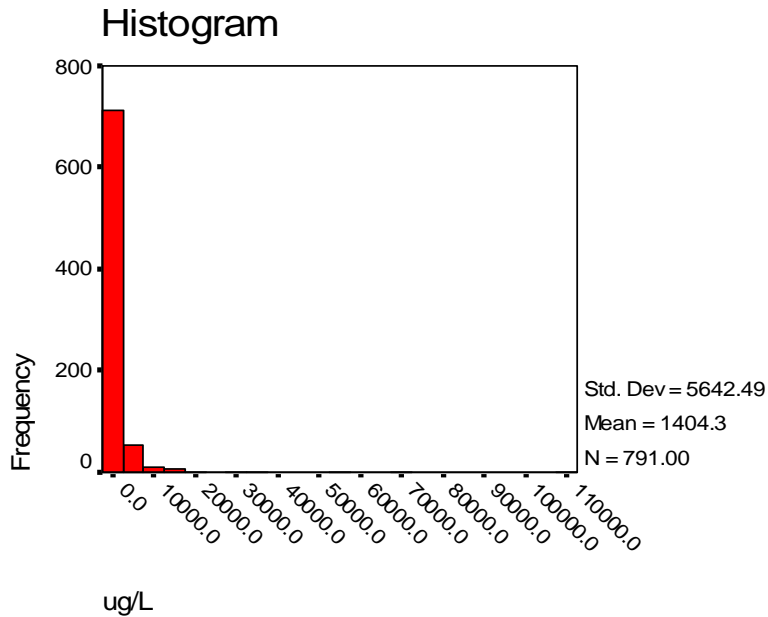
There are currently 103 facilities covered by this permit. All of the facilities are in NW or SW regions.

## II. DISCHARGE DATA STATISTICAL SUMMARY

### Untransformed data

#### Descriptives

			Statistic	Std. Error	
ug/L	Mean		1404.33		200.624
95% Confidence Interval for Mean	Lower Bound		1010.51		
	Upper Bound		1798.15		
5% Trimmed Mean			712.30		
Median			410.00		
Variance			31837687.545		
Std. Deviation			5642.489		
Minimum			2		
Maximum			110000		
Range			109998		
Interquartile Range			918.00		
Skewness			<b>13.369</b>		.087
Kurtosis			218.108		.174



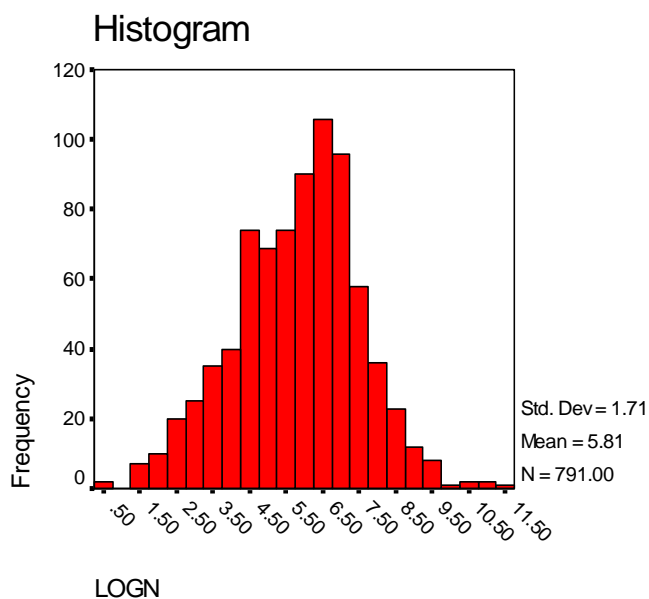


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# Logn transformed

## Descriptives

		Statistic	Std. Error
LOGN	Mean	5.81220907548281	.060766460861875
	95% Confidence Interval for Mean	Lower Bound 5.69292625150876	
		Upper Bound 5.93149189945686	
	5% Trimmed Mean	5.82962435865921	
	Median	6.01615715969835	
	Variance	2.921	
	Std. Deviation	1.709039832084415	
	Minimum	.693147180560	
	Maximum	11.6082356448	
	Range	10.9150884642	
	Interquartile Range	2.30258509299405	
	Skewness	-.169	.087
	Kurtosis	.086	.174



Untransformed mean = 334 µg/L

Copper Summary Data Untransformed			
MEAN	10 <sup>th</sup> percentile	50 <sup>th</sup> percentile	90 <sup>th</sup> percentile
334 µg/L	36.6 µg/L	410 µg/L	2410 µg/L

### **III. Source of Variables Used for Derivation of the Benchmarks**

#### percent dissolved copper in boatyard stormwater

Final Report, Shipyard AKART Analysis for Treatment of Storm Water. May 7, 1997.  
Hart Crowser. For individual permits a translator would be used that predicts the percent dissolved copper in the receiving water from the total recoverable effluent concentration. The translator is the ratio of dissolved/total recoverable observed in the receiving water. Because we don't have universal default translators, I've used an observed percent dissolved copper to derive a benchmark.

#### Marine water effect ratio (WER)

Effects of copper on marine invertebrate larvae in surface water from San Diego Bay, CA, Gunther Rosen<sup>1</sup>, Ignacio Rivera-Duarte<sup>1</sup>, Lora Kear-Padilla<sup>2</sup>, and Bart Chadwick<sup>1</sup>, 1SPAWAR Systems Center San Diego, 53475 Strothe Rd., San Diego, CA 92152-6325

#### Freshwater water effect ratio (WER)

Diamant 2004. Chehalis River WER report.  
Diamond, et.al 1997. Environmental Toxicology and Chemistry, 16(7): 1480-1487.

#### Marine dilution factor

Final Report, Shipyard AKART Analysis for Treatment of Storm Water. May 7, 1997.  
Hart Crowser.  
Anise Ahmed, Dept. of Ecology, email report, May 24, 2004.